

AWS-842TPB/SPB

Industrial Workstation (Version B)
with 10.4" Flat Panel Display

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FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with this user's manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

警告使用者

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Packing List

Before you set up the AWS-842TPB/SPB, make sure that the following materials have been included with the package, and that this manual is in good condition. If anything is missing or damaged, contact your dealer immediately:

- One AWS-842 Version B industrial workstation with 10.4" flat panel display and VGA card (PCA-6653)
- One accessory box, including:
 - Two power cords (USA type and French type)
 - Diskettes for VGA driver
 - One utility diskette for function key programming
 - AWS-842TPB/SPB User's Manual
 - PCA-6653 User's Manual
 - Cable to link keyboard to CPU card
 - Flat gray cable for 3.5" HDD and slim CD-ROM
 - Cable to link external keyboard on backplane to CPU card
 - Screw bag with screws
 - CD-ROM disc with touchscreen manual and driver (optional)
 - Diskettes for touchscreen driver (optional)
- CDR-842-0024 (optional)

The CD-ROM drive for the AWS-842TPB/SPB is packed in a separate carton, to ensure that it is shipped safely and does not deteriorate.

- One slim CD-ROM drive
- Screw bag with screws

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Additional Information And Assistance

1. Visit the Advantech web sites at **www.advantech.com** or **www.advantech.com.tw** where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User's Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
 - a. The power cord or plug is damaged.
 - b. Liquid has penetrated into the equipment.
 - c. The equipment has been exposed to moisture.
 - d. The equipment does not work well, or you cannot get it to work according to the user's manual.
 - e. The equipment has been dropped and damaged.
 - f. The equipment has obvious signs of breakage.
15. **DO NOT LEAVE THIS EQUIPMENT IN AN UNCONTROLLED ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS MAY DAMAGE THE EQUIPMENT.**

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70dB(A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Wichtige Sicherheitshinweise

1. Bitte lesen sie Sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie Keine Flüssig-oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Die NetzanschlusBsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor überhitzung schützt. Sorgen Sie dafür, daB diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim. AnschluB an das Stromnetz die AnschluBwerte.
9. Verlegen Sie die NetzanschlusBleitung so, daB niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von autorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
 - a - Netzkabel oder Netzstecker sind beschädigt.
 - b - Flüssigkeit ist in das Gerät eingedrungen.
 - c - Das Gerät war Feuchtigkeit ausgesetzt.
 - d - Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
 - e - Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
 - f - Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weiger.

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Contents

| | |
|---|-----------|
| Chapter 1 Introduction | 1 |
| 1.1 Description | 2 |
| Versatile backplane supply | 2 |
| Sealed-membrane tactile-response keypad | 2 |
| Accessible and secure control panel | 3 |
| 1.2 Specifications | 4 |
| General | 4 |
| Touchscreen (optional) | 4 |
| Passive backplane | 5 |
| Power supply options | 5 |
| LCD display | 6 |
| 1.3 Dimensions | 7 |
| 1.4 Complete Functionality | 8 |
| 1.5 Front Accessible CD-ROM | 9 |
| 1.6 Front Control Panel | 10 |
| Chapter 2 System Setup | 11 |
| 2.1 General | 12 |
| 2.2 Opening The Top Panel And Rear Panel | 13 |
| 2.3 Adding Cards | 15 |
| 2.4 Installing Optional Drives | 16 |
| 2.5 Panel Mounting | 20 |
| 2.6 Rack Mounting | 21 |

| | |
|--|-----------|
| Chapter 3 Macro Key Programming | 23 |
| 3.1 Introduction | 24 |
| 3.2 Macro Components | 24 |
| Macro keys | 24 |
| Macro EEPROM | 24 |
| Macro programming utility | 24 |
| 3.3 Syntax | 25 |
| 3.4 How To Use SFED842.COM | 27 |
| 3.5 Examples | 28 |
| Chapter 4 Maintenance | 31 |
| 4.1 Detaching The Backplane And Bracket | 32 |
| 4.2 Power Supply | 33 |
| 4.3 LCD Maintenance | 34 |
| 4.4 Keyboard Translator | 36 |
| 4.5 LED Board | 39 |
| 4.6 Touchscreen Controller | 39 |

| | |
|---|-----------|
| Appendix A Power Supply Specifications | 41 |
| A.1 260 Watt Power Supply | 42 |
| Specifications | 42 |
| General features | 44 |
| Environmental specifications | 44 |
| International standards compliance | 45 |
| A.2 -48 V_{DC} Power Supply | 46 |
| Specifications | 46 |
| Reliability | 49 |
| Environmental specifications | 49 |
| International standards compliance | 49 |
| DC output wire list | 50 |
| A.3 24 V_{DC} Power Supply | 51 |
| Specifications | 51 |
| General features | 53 |
| Environmental specifications | 53 |
| International standards compliance | 53 |
| Appendix B Touchscreen Driver Installation | 55 |
| B.1 Introduction | 56 |
| B.2 Windows 95 | 57 |
| B.3 Windows 3.1 and DOS | 60 |
| B.4 Windows NT | 63 |
| B.5 OS/2 (MonitorMouse) | 65 |

CHAPTER 1

Introduction

- Description
- Specifications
- Dimensions
- Complete functionality
- Front accessible CD-ROM
- Front control panel

1.1 Description

The AWS-842 series workstations take advantage of modern flat-panel displays for minimum size. They can be ordered with either a color TFT LCD or DSTN LCD display. The AWS-842 offers two types of passive backplane, 3 PCI / 4 ISA / 1 CPU (PCA-6108P3) and 8 ISA (PCA-6108) slots, 260 watt power supply, data-entry/function-key keypads, a slim floppy drive, and two spaces for a hard drive and a slim CD-ROM. A high-quality steel frame gives security and environmental protection that meets the toughest industrial standards.

Versatile backplane supply

The backplanes were formed by four-layer PCBs with ground and power planes for reduced noise and lower power-supply impedance. They have LED power indicators for +5 V, +12 V, -5 V and -12 V. The PCA-6108P3 contains three PCI-compatible slots, four PC/AT-compatible (ISA-bus) slots and one dedicated slot for the CPU card. The PICMG standard and three power connectors were obtained by PCA-6108P3.

Sealed-membrane tactile-response keypad

You can enter data with the workstation's two convenient sealed-membrane keypads, one with 60 data keys, the other with 20 function keys. An external keyboard can be attached through a connector on the front panel. A built-in keyboard interface module merges keyboard and keypad signals into a single output signal that acts like a standard IBM AT keyboard. No special software or I/O ports are needed. (Refer to Chapter 4 page 36 for a detailed description.)

Note:



To use the keyboard and keypad simultaneously, you must first connect the keyboard connector on the backplane to the keyboard connector on the CPU card, and then connect the external keyboard jack to another keyboard jack located next to the power supply. If you connect the keyboard to the 5-pin DIN connector on the CPU card, neither the keyboard nor the keypad will work. The keyboard must be connected to the jack behind the front door.

Accessible and secure control panel

We have put all the workstation's controls at the front of the unit for easy access. A door protects the controls from damage. External controls are: power ON/OFF and reset switches, slim floppy disk drive, slim CD-ROM drive and external KB port. Two LEDs indicate power ON and HDD status. There is a control to adjust the brightness or contrast of the LCD display.

1.2 Specifications

General

- **Front panel:** Aluminum, meets NEMA 4 or IP 65
- **Disk drive housing:** Supports one slim 3.5" FDD, one 3.5" HDD and one slim CD-ROM
- **VGA card:** CHIPS 65545 ISA-bus card (PCA-6653) with 1 MB DRAM on board, supports simultaneous CRT/LCD display
- **Cooling system:** One 49 CFM fan on rear panel
- **Membrane keypads:** One with 60 data entry keys, one with 10 function keys and 10 programmable macro function keys
- **Keyboard connector:** 5-pin DIN connector with dust-proof door on front panel
- **Indicators:** LEDs for Power On/Off and HDD activity
- **Linear VR adjustment:** Brightness for TFT LCD, contrast for DSTN LCD
- **Operating temperature:** 0 ~ 50° C (32 ~ 122° F)
- **Relative humidity:** 5 ~ 85% @ 50° C, non-condensing
- **CE compliant**
- **Dimensions (W x H x D):** 482 x 266 x 307 mm
(19.0" x 10.5" x 12.1")
- **Weight:** 15 kg (33 lb)

Touchscreen (optional)

- **Type:** Analog resistive
- **Resolution:** Continuous
- **Light transmission:** 75%

- **Controller:** RS-232 interface
- **Power consumption:** +5 V @ 200 mA
- **Software driver:** Supports MS-DOS, Windows 3.1, Windows 95, Windows NT and OS/2

Passive backplane

- **PCA-6108P3:** 4 ISA, 3 PCI, 1 CPU slot
- **PCA-6108C:** 8 ISA slot

Power supply options

AC input 260 W (standard offer)

- **Input:** 85 ~ 130 V_{AC} or 180 ~ 260 V_{AC}, switchable
- **Output:**
+5 V @ 25 A; +12 V @ 9 A; -5 V @ 0.5 A; -12 V @ 2.0 A
- **MTBF:** 100,000 hours
- **Safety:** UL/CSA/TUV

-48 V_{DC} input 310 W

- **Input:** -38 ~ -58 V_{DC}
- **Output:**
+5 V @ 25 A; +12 V @ 10 A; -5 V @ 1 A; -12 V @ 5 A
- **MTBF:** 100,000 hours

24 V_{DC} input 250 W

- **Input:** 19 ~ 32 V_{DC}
- **Output:**
+5 V @ 25 A; +12 V @ 10 A; -5 V @ 1 A; -12 V @ 1 A
- **MTBF:** 100,000 hours

LCD display

| Model | AWS-842T | AWS-842S |
|--------------------------------|-----------------|---------------|
| Display type | 10.4" TFT color | 10.4" DSTN |
| Max. resolution | 640 x 480 | 640 x 480 |
| Max. colors | 256 K colors | 4096 colors |
| Dot size (mm) | 0.33 x 0.33 | 0.33 x 0.33 |
| Luminance (cd/m ²) | 250 | 130 |
| Viewing angle | 90° | 90° |
| Temperature | 0 ~ 50° C | 0 ~ 45° C |
| VR controller | Brightness | Contrast |
| LCD MTBF | 50,000 hours | 50,000 hours |
| Backlight MTBF | 20,000 hours | 25,000 hours |
| VGA card | PCA-6653-842T | PCA-6653-842S |

1.3 Dimensions

Before you rackmount or panelmount the AWS-842TPB/SPB, use the following diagram to verify that the mounting screws correspond with the holes in your panel/rack.

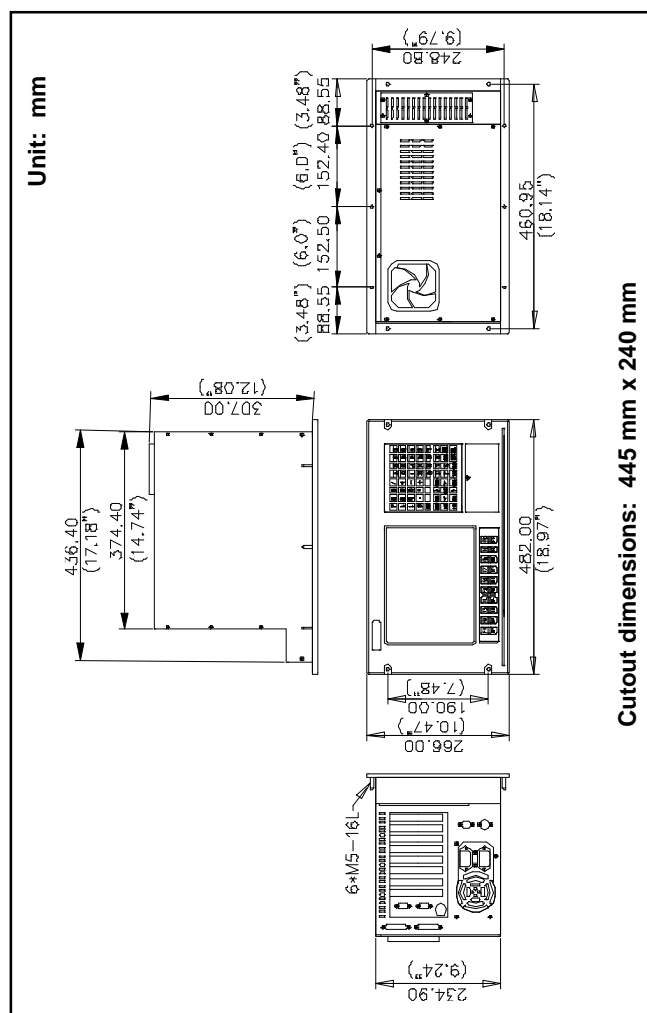


Figure 1-1: Dimensions

1.4 Complete Functionality

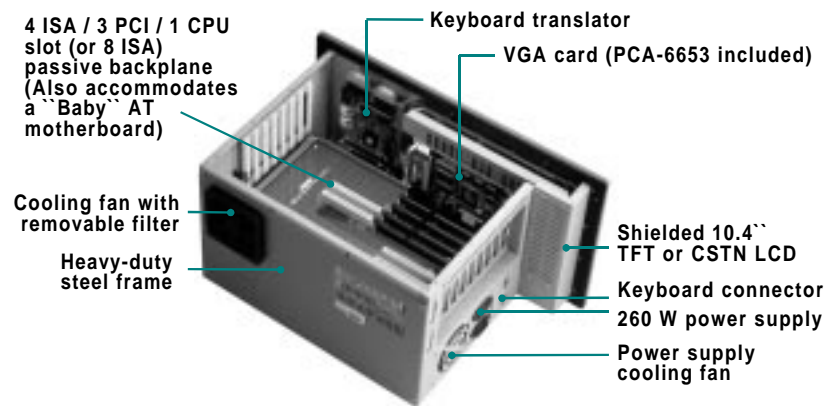


Figure 1-2: Complete functionality

1.5 Front Accessible CD-ROM

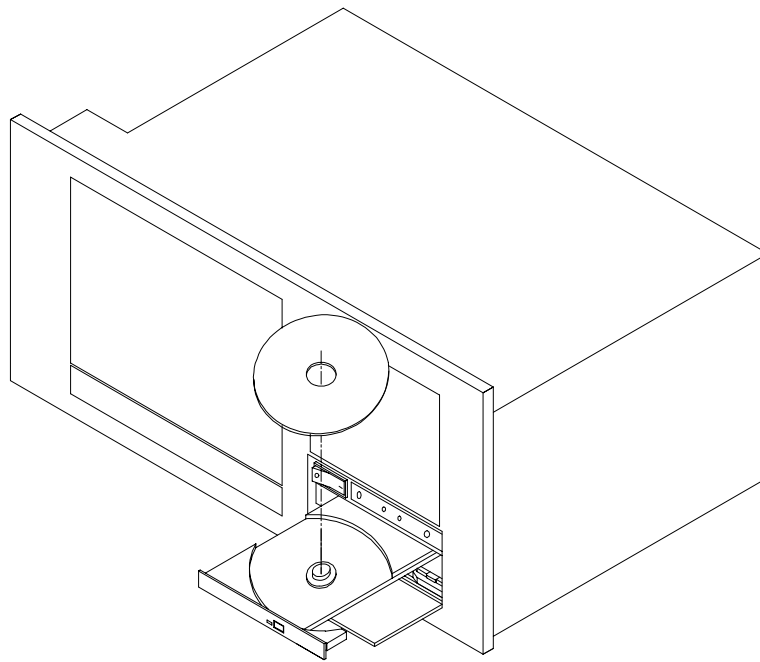


Figure 1-3: Front accessible CD-ROM

1.6 Front Control Panel

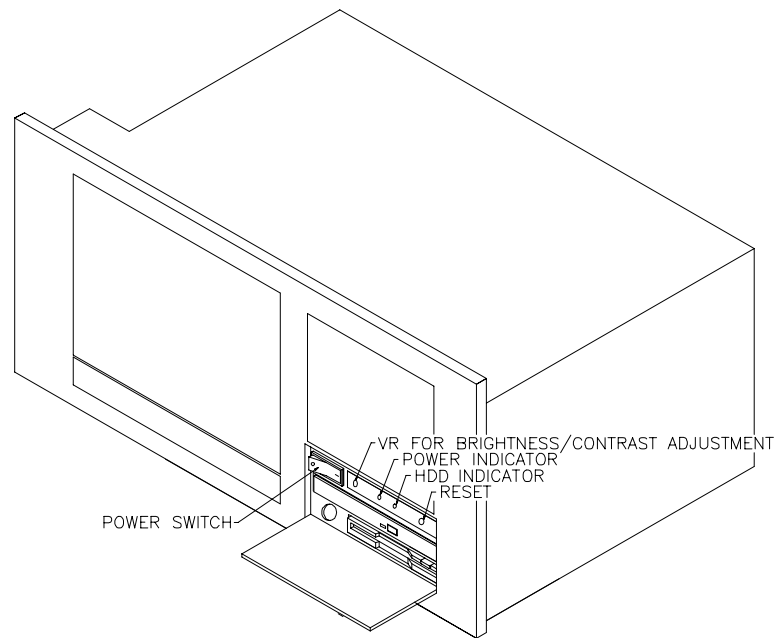


Figure 1-4: Front control panel

CHAPTER 2

System Setup

- General
- Opening the top panel and rear panel
- Adding cards
- Installing optional drives
- Panel mounting
- Rack mounting

2.1 General

Your AWS-842TPB/SPB is easy to use. All you have to do is remove its cover, install your CPU card, display adapter card, an optional hard disk drive, and whatever additional I/O cards that your application requires, and you are ready to mount your workstation into a 19-inch rack or panel.

Warning! *Do not begin your installation until you are sure there is no power flowing within the AWS-842TPB/SPB. It must be switched off and unplugged. Every time you access the inside of the AWS-842TPB/SPB, you should switch it off and unplug it.*



2.2 Opening The Top Panel And Rear Panel

Remove the eight screws from the top panel and then open the top cover. (See Fig. 2-1.) After removing the top cover, you can detach the six screws from the rear panel and open the rear panel. (See Fig. 2-2.)

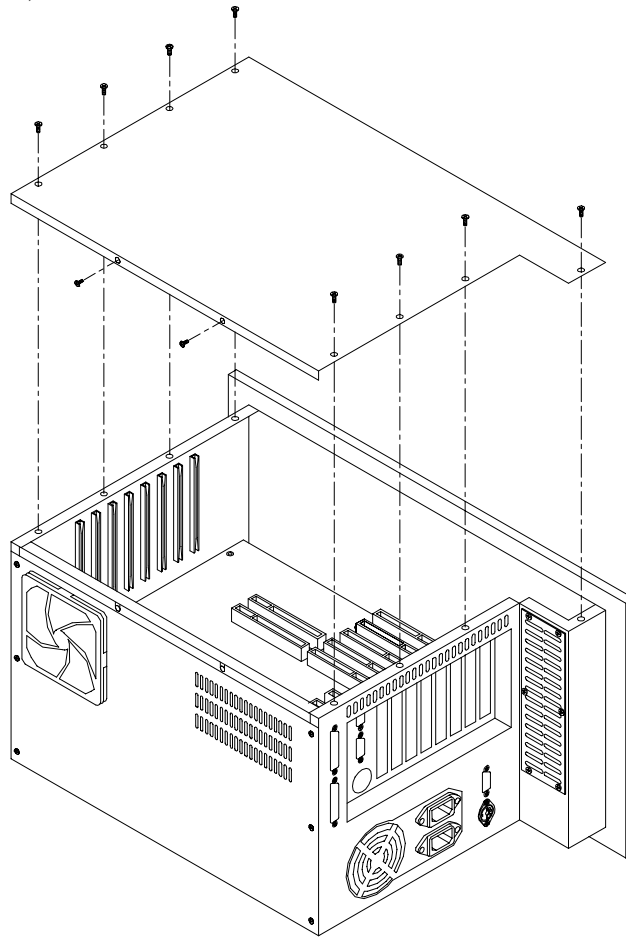


Figure 2-1: Opening the top panel

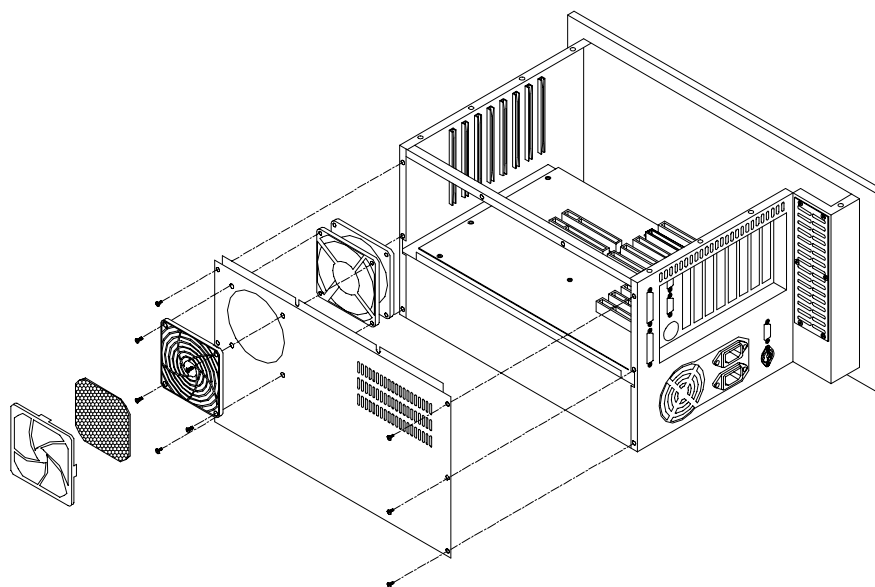


Figure 2-2: Opening the rear panel

2.3 Adding Cards

The PCI passive backplane accepts both PCI-bus and ISA-bus CPU and I/O cards. We recommend all-in-one cards. They are durable, and save valuable slot space by bundling a CPU card with hard disk and floppy disk controllers, as well as serial and parallel ports.

Open the top panel (see Section 2.2) and then slowly slide the card in and carefully press it into the backplane socket. Secure it with a screw to the top mounting bar. (See Fig. 2-3). Connect the wires. Install additional cards as needed. When you have finished, reattach the cover.

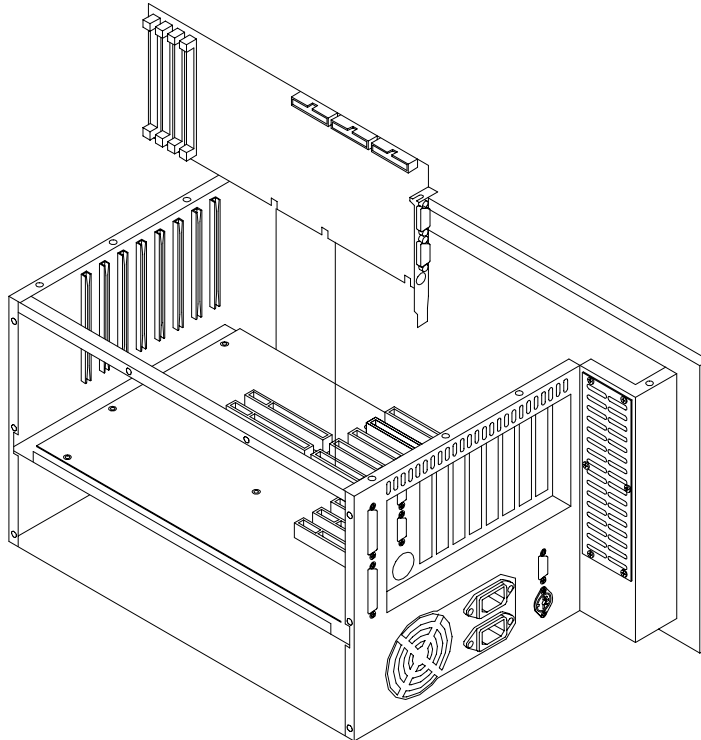


Figure 2-3: Installing add-on cards

2.4 Installing Optional Drives

The AWS-842TPB/SPB provides space for three drives (one slim floppy disk drive, one hard disk drive and one slim CD-ROM drive) underneath the case. A front-facing floppy drive has already been installed. You can access it from the FDD dust-resistant door panel.

If you wish, you can add a 3.5" hard disk drive or a slim CD-ROM drive above the front-facing floppy drive. Unscrew the drivemount assembly from the body of the case, attach the drive with the screws, and attach the ribbon connector. (See Figs. 2-4, 2-5, 2-6 and 2-7.) When you have added the drives, set the ribbon cables in place and mount the drivemount assembly.

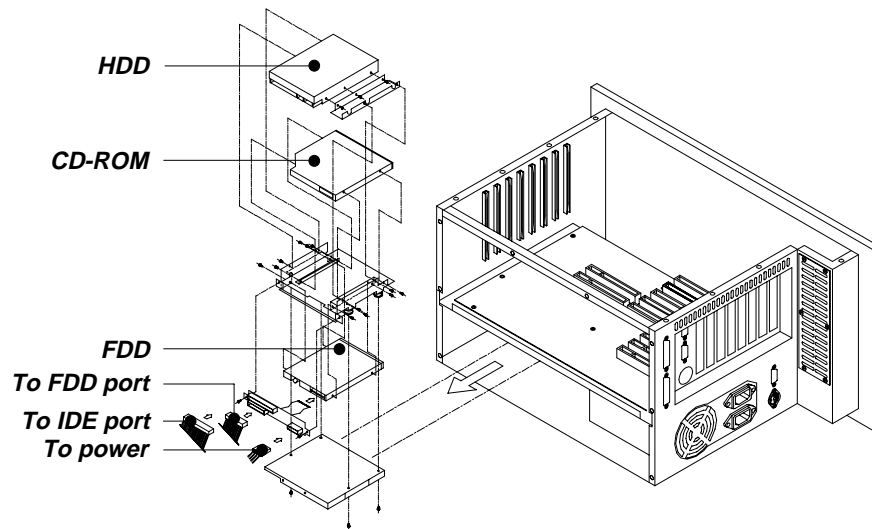


Figure 2-4: Installing optional disk drives - overall view

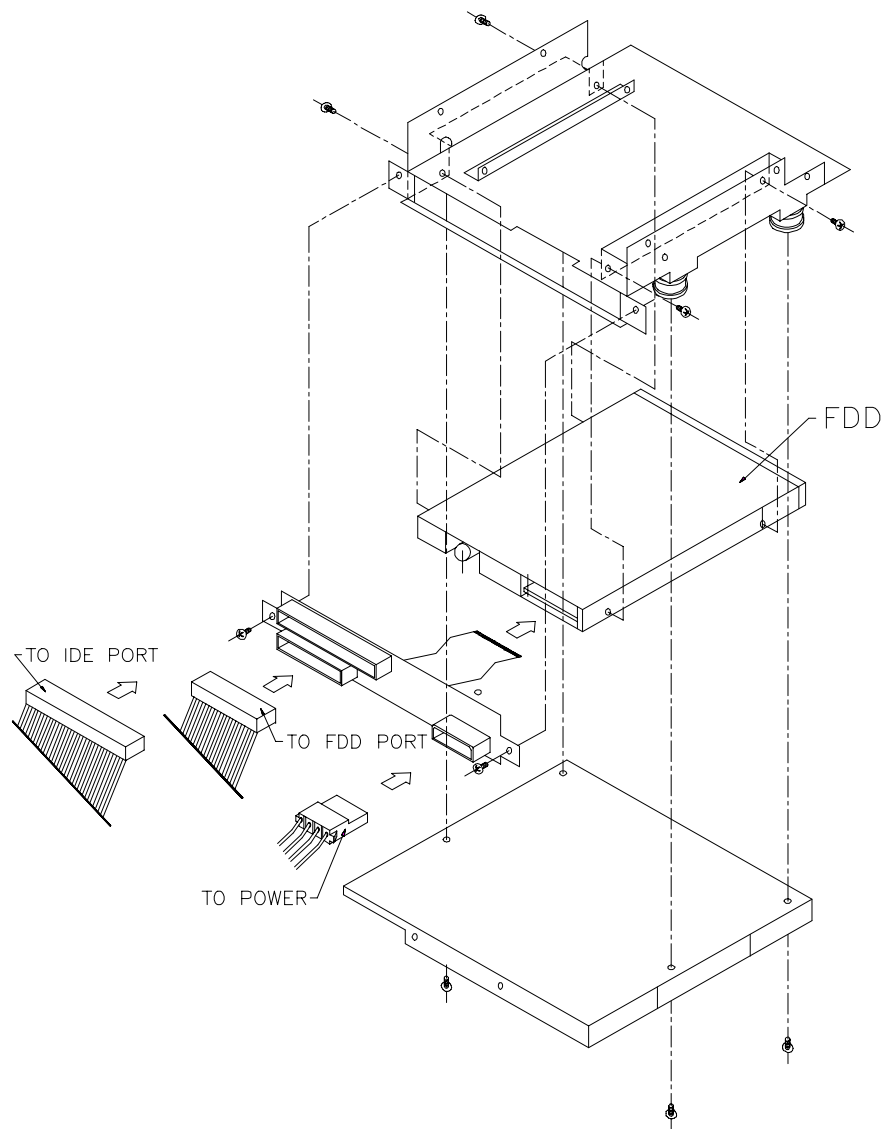


Figure 2-5: Installing an FDD

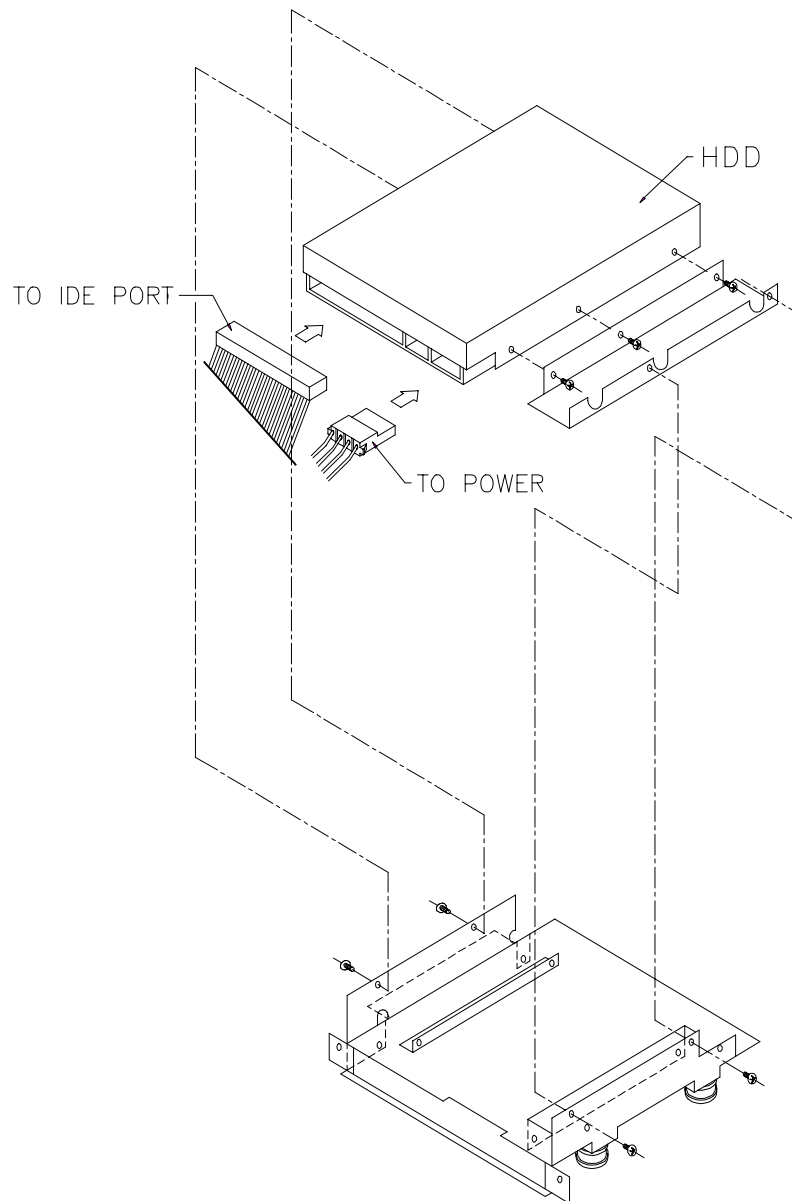


Figure 2-6: Installing an HDD

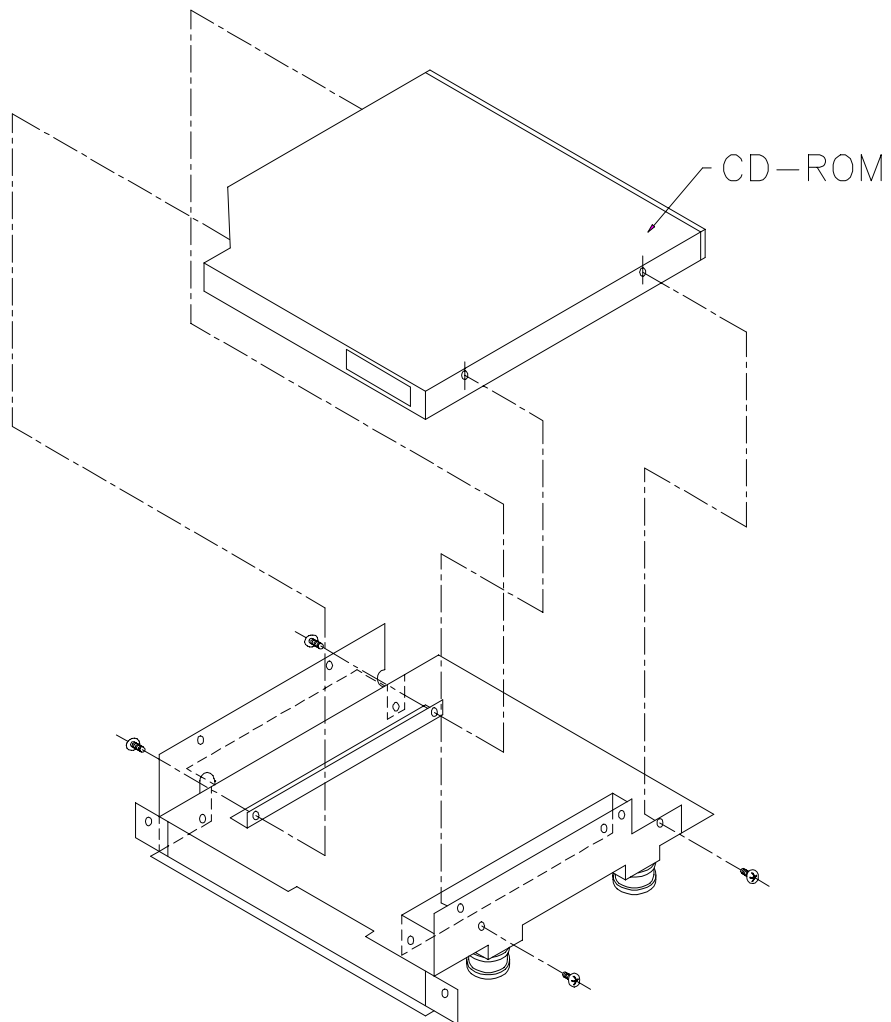


Figure 2-7: Installing a CD-ROM

2.5 Panel Mounting

The AWS-842TPB/SPB will stand on a shelf or a table, and it may be mounted within a panel. Dimensions for the case, the mounting flange, and the mounting bolts are shown in Fig. 1-1.

Once you have added your cards, drives, and other equipment, you should switch on the AWS-842TPB/SPB to confirm that it works. Then set the case within your panel aperture so that your screw holes line up with the mounting bolts on the flange of the AWS-842TPB/SPB. Secure the bolts to the panel.

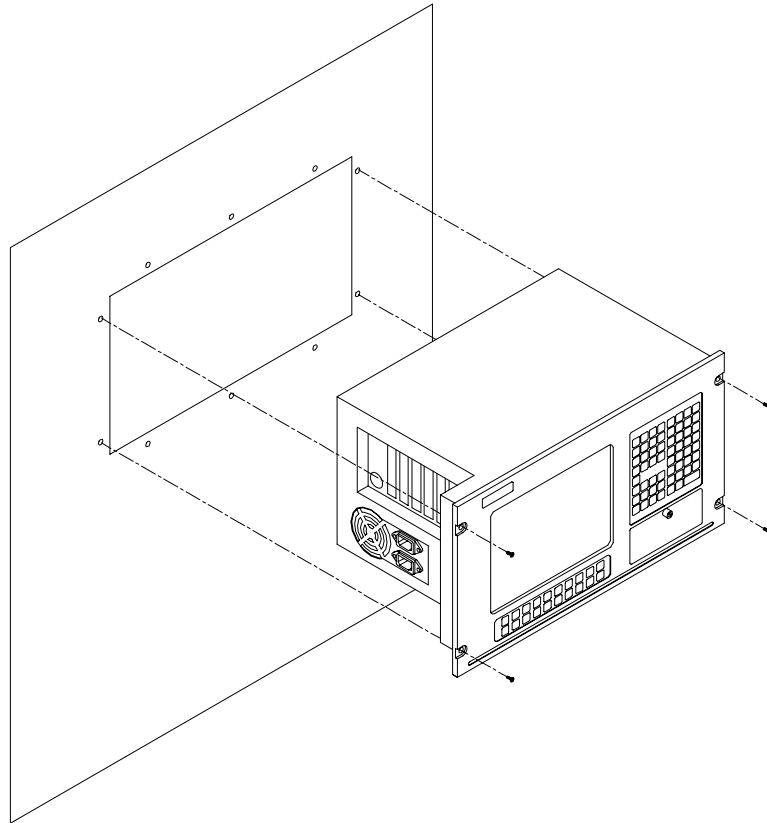


Figure 2-8: Panel mounting

2.6 Rack Mounting

The AWS-842TPB/SPB can also be mounted in a 19" rack. Make sure that all additional equipment has been installed correctly. Also make sure that all cabling (such as the monitor signal cable, the keyboard cable and the monitor power cable) has been reattached. Attach the rack to the case using screws on both sides of the case.

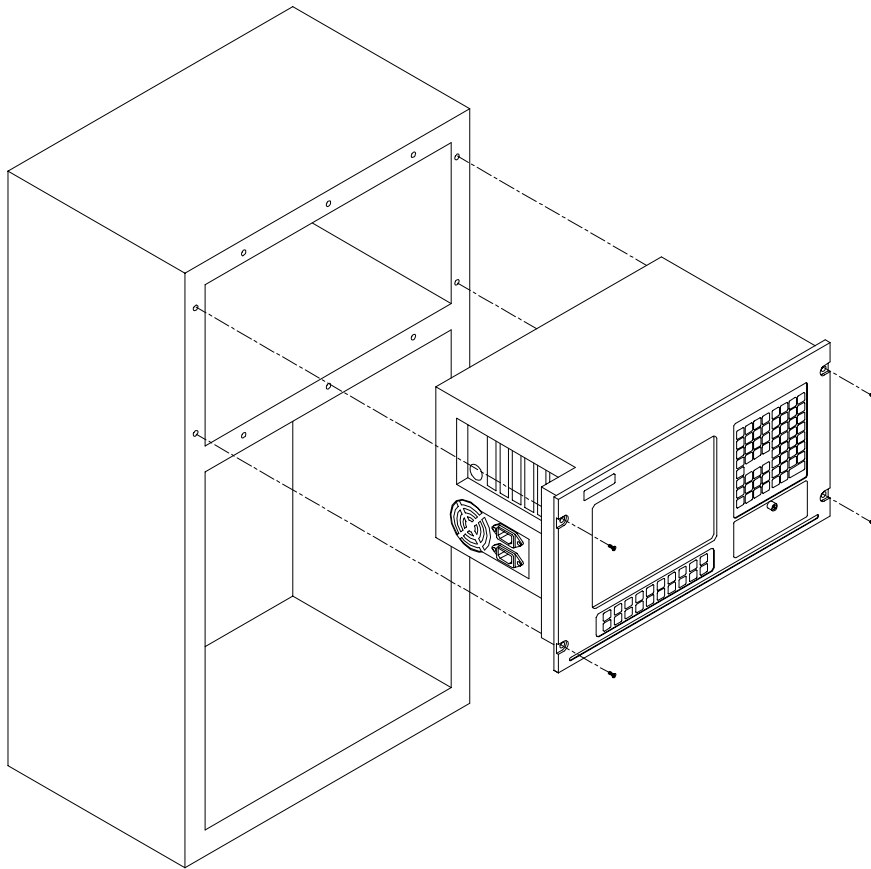


Figure 2-9: Rack mounting

CHAPTER 3

Macro Key Programming

- Introduction
- Macro components
- Syntax
- How to use SFED842.COM
- Examples

3.1 Introduction

Our workstations are equipped with programmable function keys (macro keys) that greatly enhance the operator interface. Macros, far more powerful than batch files, automate the most commonly used input sequences. They extended their functional reach to within application programs.

3.2 Macro Components

The following article explains how to use and program the function keys. The complete macro function consists of the following elements:

Macro keys

Ten programmable macro keys that are located under the monitor screen of your workstation.

Macro EEPROM

Holds the key sequences that are activated when the corresponding macro key is pushed.

Macro programming utility

On the disk you will find a program called SFED842.COM. The SFED software provides an edit function to produce an ASCII file that contains keystroke sequences for every macro key. After you have finished editing the file, the program will ask you whether you want to save the macro script and/or transmit it to the EEPROM. Macros consist of keystroke sequences to automate the most common procedures in your application. The way they function is much like batch files (.BAT) under DOS, but there are some differences. In a Macro you have to specify the ENTER key explicitly. Macros give you the possibility to enter key sequences in an application that was executed by the macro itself.

3.3 Syntax

Macro definitions consist of ASCII characters or character codes for special characters such as ALT, ENTER, SHIFT, F1, SF2, and so on. These codes are predefined, and SFED842.COM will display them on the screen for you. They are easily recognizable, appearing between the square brackets '[' and ']'.

For example :

ALT represents [26]
ENTER represents [33]

In your macro script, you can enter ordinary text (ASCII characters) or the code(s) of the required special character(s).

For example :

CD\TOOLKIT[33] means CD\TOOLKIT [ENTER]

For combination keystrokes (ALT/SHIFT/CTRL + another key) enter the codes of the special characters, followed by [90] (RELEASE).

For example:

ALT-F1 represents [26][44][90]
CTRL-C represents [28]C[90]
SHIFT-B represents [27]B[90]

Please refer to the following examples:

ALT-X represents [26]X[90] or [26]x[90].

ALT-F1 represents [26][44][90]

SHIFT-X represents [27]X[90]

SHIFT-F1 represents [27][44][90]

CTRL-X represents [28]X[90]

CTRL-F represents [28][44][90]

CTRL-ALT-DEL represents [28][26][41][90] (reboot)

CTRL-ALT-A represents [28][26]A[90]

CTRL-SHIFT-1 represents [28][27]1[90]

Another useful function is the DELAY instruction. You can instruct the macro program to wait before executing the next keystroke. SFED842.COM displays the codes that you can use for various delays.

For example:

[86] - Wait for 10 seconds before executing next keystroke

[88] - Wait for 1 minute before executing next keystroke.

[26]A[90][86][26]B[90] means ALT-A, wait 10 seconds, ALT-B

3.4 How To Use SFED842.COM

First, copy all the files to your hard disk and/or make a backup disk. When starting the macro editor, you will have to specify either an existing macro script file or a new macro script file. Here we will create a new file by typing SFED842 NEWKEY.TXT [ENTER].

The following screen will appear:

| | | | | | |
|---|----------------------------|--------------|------------|--------------------------------------|----------|
| Advantech Workstation Special Function Key Edit Program | | | | Rev. 11/16/1995 | |
| Table of Control Codes : | | | | Example : SF5 =CD\WINDOWS[33]WIN[33] | |
| TAB [24] | HOME [3C] | [[30] |] [31] | BS [35] | ESC [36] |
| ALT [26] | END [3D] | ↑ [38] | ↓ [39] | ← [3A] | → [3B] |
| SHIFT [27] | PGUP [3E] | F1 [44] | F2 [45] | F3 [46] | F4 [47] |
| CTRL [28] | PGDN [3F] | F5 [48] | F6 [49] | F7 [4A] | F8 [4B] |
| ENTER[33] | INS [40] | F9 [4C] | F10 [4D] | F11 [4E] | F12 [4F] |
| PRTSC[7E] | DEL [41] | RELEASE [90] | | | |
| PAUSE[7F] | SF1 to SF10 = [70] to [79] | | | | |
| Key delay Mode : | | | | | |
| 0.1 Sec [80] | 0.5 Sec [81] | 1 Sec [82] | 2 Sec [83] | 3 Sec [84] | |
| 5 Sec [85] | 10 Sec [86] | 30 Sec [87] | 1 Min [88] | 1 Hour [89] | |
| SF1 = | | | | | |
| SF2 = | | | | | |
| SF3 = | | | | | |
| SF4 = | | | | | |
| SF5 = | | | | | |
| SF6 = | | | | | |
| SF7 = | | | | | |
| SF8 = | | | | | |
| SF9 = | | | | | |
| SF10 = | | | | | |
| KBT ID:AD111695 | | | | ESC:Quit/Save/Transmit | |

Figure 3-1: The Macro Editor screen

When you have finished editing, press the ESC key. At the bottom line of the screen you will be prompted to choose if you want to save the file and/or if you want to transmit it to the EEPROM.

After confirmation with the ENTER key, the tasks are carried out and you return to DOS.

3.5 Examples

We will explain all macro functions that you can find in the EX842.TXT macro script file. After typing SFED842 EX842.TXT [ENTER], the following editor screen will appear:

| Advantech Workstation Special Function Key Edit Program | | | | Rev. 11/16/1995 | |
|--|----------------------------|----------------|--------------------------------------|---|----------|
| Table of Control Codes : | | | Example : SF5 =CD\WINDOWS[33]WIN[33] | | |
| TAB [24] | HOME [3C] | [[30] |] [31] | BS [35] | ESC[36] |
| ALT [26] | END [3D] | ↑ [38] | ↓ [39] | ← [3A] | → [3B] |
| SHIFT [27] | PGUP [3E] | F1 [44] | F2 [45] | F3 [46] | F4 [47] |
| CTRL [28] | PGDN [3F] | F5 [48] | F6 [49] | F7 [4A] | F8 [4B] |
| ENTER[33] | INS [40] | F9 [4C] | F10 [4D] | F11 [4E] | F12 [4F] |
| PRTSC[7E] | DEL [41] | RELEASE [90] | | | |
| PAUSE[7F] | SF1 to SF10 = [70] to [79] | | | | |
| Key delay Mode : | | | | | |
| 0.1 Sec [80] | 0.5 Sec [81] | 1 Sec [82] | 2 Sec [83] | 3 Sec [84] | |
| 5 Sec [85] | 10 Sec [86] | 30 Sec [87] | 1 Min [88] | 1 Hour [89] | |
| SF1 = CD\TOOL[33]SFED842 EXAMPLE.TXT[33] SF2 = COPY C:\CONFIG.EMM C:\CONFIG.SYS[33]Y[33][85][79] SF3 = SF4 = C:\WP51\WP[33][86][27][4D][90]REPORT.WP5[33] SF5 = SF6 = SF7 = SF8 = SF9 = SF10 = [28][26][41][90] | | | | | |
| Save(Y/N)? | | Transmit(Y/N)? | | KBT ID:AD111695 ESC:Quit/Save/Transmit | |

Figure 3-2: Macro examples

SF1 = CD\TOOL[33] SFED842 EXAMPLE.TXT[33]

This macro changes to the TOOL directory, then starts up SFED842.COM with EXAMPLE.TXT.

SF2 = COPY C:\CONFIG.EMM C:\CONFIG.SYS[33]Y[33][85][79]

The configuration information is changed by copying CONFIG.EMM to CONFIG.SYS. After a delay of 5 seconds, [85], the macro, invokes macro function key SF10, [79], which was defined to reset the system.

SF4 = C:\WP51\WP[33][86][27][4D][90]REPORT.WP5[33]

This example shows that after a macro executes, it is able to direct the program to accomplish several tasks. WordPerfect is started. After a delay of 10 seconds (time to load the program), the command Shift-F10, [27][4D], is issued to import a text file. The name of the text file (REPORT.WP5) is inserted and finally ENTER, [33], causes the text file to be loaded and appear on the screen.

SF10 = [28][26][41][90]

Restarts the computer (CTRL-ALT-DEL).

CHAPTER 4

Maintenance

- Detaching the backplane and bracket
- Power supply
- LCD maintenance
- Keyboard translator
- LED board
- Touchscreen controller

4.1 Detaching The Backplane And Bracket

Before detaching the bracket, you must open the top and rear covers (see Figure 2-1). Remove the card from the backplane and detach the backplane. If you want to repair and upgrade your peripherals (for example, the membrane keypad controller or the backlight of the LCD), you must first pull out the bracket.

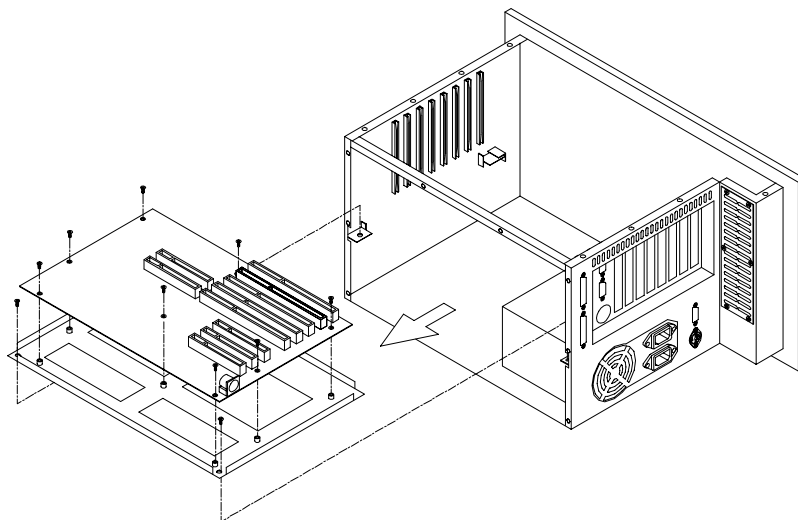


Figure 4-1: Detaching the backplane and bracket

4.2 Power Supply

To repair or upgrade your power supply, first detach and remove the top and rear covers. Unscrew the four screws on the side panel (see Fig. 4-2), and disconnect all DC output connectors and the AC line.

Warning: *Shut off all power to the AWS-842TPB/SPB before you commence to repair the power supply. Switch off the power and unplug the unit.*



For detailed power supply specifications, refer to Appendix A.

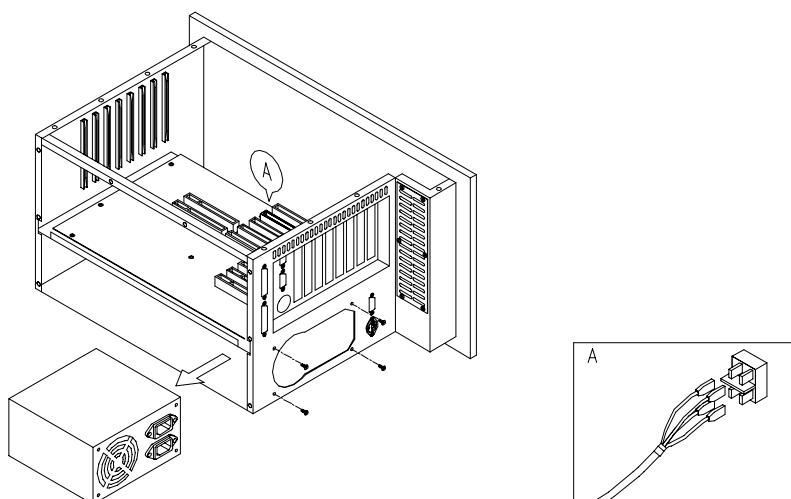


Figure 4-2: Installing the power supply

4.3 LCD Maintenance

In the normal working life of the AWS-842TPB/SPB, you may have to replace the inverter, LCD or LCD backlight. Follow these instructions:

1. Open the top and rear cover. (See Fig. 2-1.)
2. Disconnect the cable from the LCD controller and LCD.
3. Pull out the bracket which is located below the backplane.
4. Detach the bracket behind the front panel.
5. Disconnect the cables of the inverter, and the cables of the touchscreen controller (if applicable). Pull out the LCD bracket to change the inverter.
6. Unscrew the four screws, and pull out the LCD very carefully.
7. Unscrew the screws on the LCD (see Fig. 4-3), and then change the backlight.

Warning: The backlight is small and fragile. Use caution when handling or replacing it.

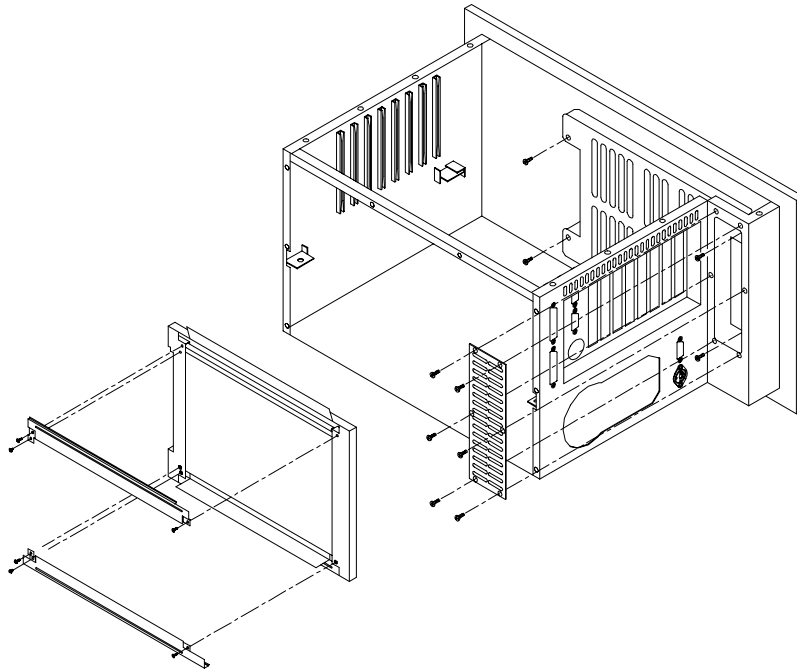


Figure 4-3: Installing the LCD backlight

4.4 Keyboard Translator

The keyboard translator is an interface which switches the signal from the membrane keypad to the standard AT keyboard. There are six connectors on the board. On top of the board, there are two connectors linking two flat cables with the larger membrane keypad (as shown in Fig. 4-5). On the side of the board, there are four connectors. For connection details, refer to Fig. 4-5.

When servicing the keyboard translator:

1. Switch off the power, and detach the main power cord.
2. Detach the work drawer and cover from the AWS-842TPB/SPB unit. (See Fig. 2-1.)
3. Pull out the work drawer out as far as it will go.
4. Remove the keypad connector protective bracket.
5. Carefully detach all cables connected to the keyboard translator. (See Fig. 4-5.)
6. Unscrew the four screws on the corners, pull out the keyboard translator, and replace it.

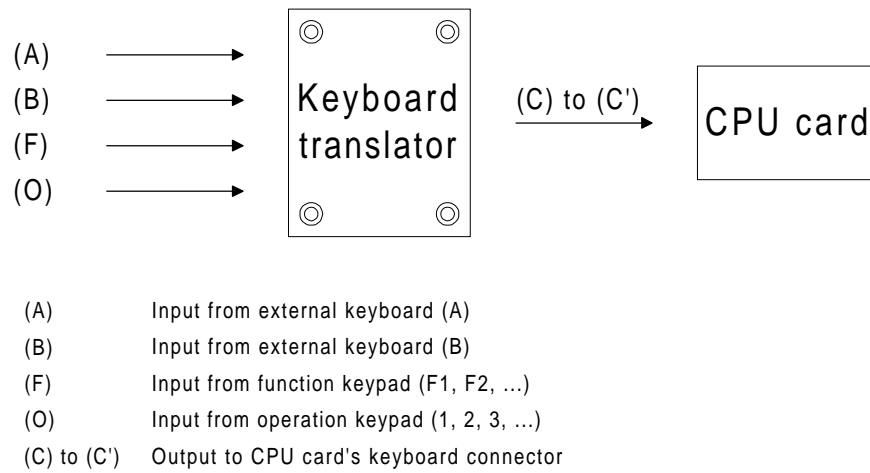


Figure 4-4: Keyboard translator input/output (basic schematic)

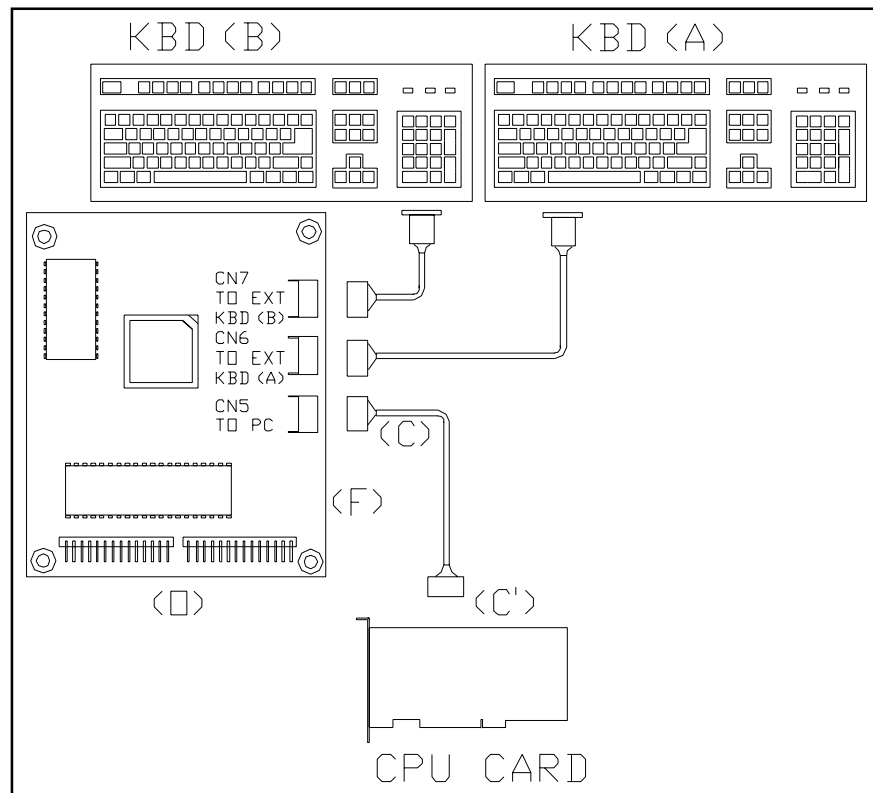


Figure 4-5: Keyboard translator input/output (detailed schematic)

4.5 LED Board

It is very unlikely that the LED board will have to be replaced. There are two indicators in the LED board: HDD and power. You do not need to remove the backplane and bracket to replace the LED board. Simply detach the bays for the FDD, HDD and slim CD-ROM drive, and then unscrew the three screws fixed into the panel. Before removing the LED board, carefully detach the cables by pulling them down.

4.6 Touchscreen Controller

To service or replace the touchscreen controller:

1. Open the top and rear cover. (See Fig. 2-1.)
2. Disconnect the cable from the LCD controller and LCD.
3. Pull out the bracket which is located below the backplane.
4. Detach the bracket behind the front panel.
5. Disconnect the cables of the inverter, and the cables of the touchscreen controller.
6. Replace the touchscreen controller.

Caution: *Do not bend the touchscreen tail which is attached to the touchscreen sensor.*

APPENDIX A

Power Supply Specifications

- 260 watt power supply
- -48 V_{DC} power supply
- 24 V_{DC} power supply

A.1 260 Watt Power Supply

The AWS-842TPB/SPB off-line switching power supply is ideal for use in workstations. It has been designed to meet UL, CSA and TUV safety standards. It has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

Specifications

Input voltage: 85 ~ 130 V_{AC} and 180 ~ 260 V_{AC}

Input frequency: 47 ~ 63 Hz

Inrush current: Not exceeding 35 A @ 115 V_{AC} or 70 A @ 230 V_{AC}; cold start @ 25° C

Output load range:

Table A-1: 260 watt power supply output load range

| Output No. | Output | Min. load | Rated load | Peak load | Voltage accuracy |
|------------|--------|-----------|------------|-----------|-------------------|
| 1 | +5 V | 1.0 A | 25 A | 28 A | 4.90 ~ 5.10 V |
| 2 | +12 V | 0.1 A | 9 A | 10 A | 11.28 ~ 12.72 V |
| 3 | -12 V | 0 A | 2.0 A | - | -11.40 ~ -12.60 V |
| 4 | -5 V | 0 A | 0.5 A | - | -4.75 ~ -5.25 V |

At the factory, the +12 V output was set at 40% of its rated load, and other outputs were set at 60% of their respective rated loads. The +5 V output was set between 5.00 and 5.10 V. The other outputs were confirmed to be within their respective voltage accuracy ranges.

Output power:

Total DC continuous power does not exceed 260 W. Total DC peak power does not exceed 280 W. When the input voltage is less than 100 V_{AC}, total DC continuous power should not exceed 220 W.

Ripple and noise:

Peak to peak ripple and noise for +12 V is less than 140 mV. Peak to peak ripple and noise for other outputs is less than 1% of each output's respective voltage at the rated load (namely 115/230 V_{AC}). Measurements were performed with a 15 MHz bandwidth limited oscilloscope, and each output was terminated with a 0.47 μ F capacitor.

Line regulation:

The output line regulation for +12 V is less than $\pm 2\%$. The output line regulation for other outputs is less than $\pm 1\%$, when measured at each output's respective rated load and under $\pm 10\%$ changing input voltage conditions.

Load regulation:

The values for each of the following output numbers were obtained by changing each output load $\pm 40\%$ from the 60% rated load, whilst simultaneously keeping all other outputs at 60% of their respective rated loads.

| Table A-2: 260 watt power supply load regulation | |
|--|-----------------|
| Output No. | Load regulation |
| 1 | $\pm 3\%$ |
| 2 | $\pm 5\%$ |
| 3 | $\pm 1\%$ |
| 4 | $\pm 1\%$ |

Hold up time:

14 ms typical @ 115 V_{AC}

This figure was obtained from the last AC line charging pulse to the point where +5 V dropped down to +4.75 V.

Power good signal:

When the power is turned on, the power good signal will activate 100 to 500 ms after all output DC voltages are operating within their respective regulation limits.

Power fail signal:

This will activate at least 0.5 ms before any of the output voltages fall below their respective regulation limits.

General features**Output protection:**

If for some reason the power supply fails to control itself, the built-in over-voltage protection circuit will shut down the outputs to prevent damage to external circuits. The trip point of the crowbar circuit is approximately 5.9 ~ 7.0 V. The power supply will go into hiccup mode under short circuit or overload conditions, and will recover automatically when such conditions cease to exist.

Environmental specifications

Operating temperature: 0 ~ 50° C, input 104/244 V

Storage temperature: -40 ~ 75° C

International standards compliance

Safety: UL 1950, CSA 22.2 No. 234, TUV EN 60950

EMI: Conductivity: FCC Docket 20780 (Curve B)
VCCI II, CISPR 22 Level B
Radiation: FCC Docket 20780 (Curve B)
VCCI I, CISPR 22 Level A

EMS: IEC-801-2: 8 KV (air discharge), Criteria B
IEC-801-3: 10 V/M unmodulated, Criteria A
IEC-801-4: 2 KV, Criteria B

Lifetime: More than 3 years @ 70% load @ 25° C

A.2 -48 V_{DC} Power Supply

The following specifications describe the physical and electrical characteristics of a 310 W, four output, DC to DC switching power supply housed in a standard size PS/2 casing.

Specifications

| | |
|------------------------|--|
| Input voltage: | -38 ~ -58 V _{DC} (continuous operation) -48 V _{DC} (normal operation) |
| Input current: | 10 A max. @ -48 V _{DC} input |
| Inrush current: | 5 A max. @ -48 V _{DC} input |
| Efficiency: | 70% min. @ full load and normal line voltage |

Output characteristics:

Table A-3: -48 V_{DC} power supply output characteristics

| Output voltage | Loading current | | | Total regulation tolerance | | Noise plus ripple |
|---------------------|-----------------|-------|-------|----------------------------|------|-------------------|
| | Min. | Max. | Surge | Max. | Min. | Max. |
| +5 V _{DC} | 2 A | 25 A | 30 A | +3% | -3% | 50 mV p-p |
| +12 V _{DC} | 0 A | 10 A | 12 A | +3% | -3% | 120 mV p-p |
| -5 V _{DC} | 0.0 A | 1.0 A | - | +5% | -5% | 50 mV p-p |
| -12 V _{DC} | 0.0 A | 5 A | - | +3% | -3% | 120 mV p-p |

Note 1: Total regulation tolerance includes temperature change, warmup drift and dynamic load.

Note 2: Ripple and noise were measured differentially at the power supply using loads that were each shunted by at least a 0.1 μ F ceramic disc capacitor and a 10 μ F electrolytic capacitor, each capacitor having a bandwidth up to 20 MHz.

Overshoot (resistive load):

Any output overshoot when the power is turned on does not exceed 10% of the nominal output voltage.

Output power: Maximum continuous: 310 W

Power good and power fail signals (optional):

When the power is turned on, the power good signal will activate 100 to 500 ms after all output DC voltages are operating within their respective regulation limits.

The power fail signal will activate at least 1 ms before the +5 V output voltage falls below its regulation limit.

Short circuit protection:

A short circuit placed on any output to ground is shut down. When the short circuit conditions have ceased to exist, power will then be recycled to restart the power supply.

Over-current protection:

The power supply will shut down all the DC outputs when any output is overloaded beyond its current limit or beyond its nominal line voltage limit. When the over-current conditions have ceased to exist, power will then be recycled to restart the power supply.

| | | |
|-----------------------|--------|-----------|
| Current limit ranges: | 5 V: | 32 ~ 45 A |
| | 12 V: | 13 ~ 20 A |
| | -12 V: | 6 ~ 12 A |
| | -5 V: | 1.5 ~ 3 A |

Over-voltage protection:

The power supply will shut down all the DC outputs when any output maximum voltage limit is exceeded. When the over-voltage conditions have ceased to exist, power will then be recycled to restart the power supply.

| | | |
|-----------------------|--------|--------------------|
| Voltage limit ranges: | 5 V: | 6.25 ± 0.75 V |
| | 12 V: | 14 ± 1 V |
| | -5 V: | -6.25 ± 0.75 V |
| | -12 V: | -14 ± 1 V |

Reset time:

When the power supply has automatically shut down, and the short circuit, over-current and/or over-voltage conditions have ceased to exist, power will be automatically recycled to restart the power supply within 3 seconds of such return to normal conditions.

No load start:

When the power supply is switched on but with no load connected, the power supply does not get damaged, and it is still completely safe for users.

Transient response:

Dynamic load change: $\pm 50\%$ of maximum rating load

Recovery time: 500 μ s max.

Reliability

Mean time between failures (MTBF): 100,000 hours minimum

Environmental specifications

Operating temperature: 0 ~ 50° C

Storage temperature: -40 ~ 60° C

Operating and storage humidity: 10 ~ 95% RH

Operating altitude: sea level ~ 15,000 ft

Storage altitude: sea level ~ 50,000 ft

International standards compliance

Safety: UL 1950
CSA 22.2 No. 234
TUV EN 60950

EMI: FCC Part 15 Subpart J Class B

DC output wire list

All DC output cables use UL 1007 type wires.

Table A-4: -48 V_{DC} power supply DC output wire list

| Connector | Output | Color | Wire #AWG | Length (mm) | Housing | Terminal |
|-----------|--------|--------|-----------|----------------|--|--|
| P8-1 | PG | Orange | 18 | 300 +30/-10 | BURNDY GTC 6P-1 or equivalent | BURNDY DCK 18-2TR9 or equivalent |
| P8-2 | +5 V | Red | 18 | | | |
| P8-3 | +12 V | Yellow | 18 | | | |
| P8-4 | -12 V | Blue | 18 | | | |
| P8-5 | COM | Black | 18 | | | |
| P8-6 | COM | Black | 18 | 300 +30/-10 | BURNDY GTC 6P-1 or equivalent | BURNDY DCK 18-2TR9 or equivalent |
| P9-1 | COM | Black | 18 | | | |
| P9-2 | COM | Black | 18 | | | |
| P9-3 | -5 V | White | 18 | | | |
| P9-4 | +5 V | Red | 18 | | | |
| P9-5 | +5 V | Red | 18 | | | |
| P9-6 | +5 V | Red | 18 | 300 +30/-10 | AMP 480424-0 or equivalent | AMP 61314 or equivalent |
| PE-1 | +12 V | Yellow | 18 | | | |
| PE-2 | COM | Black | 18 | | | |
| PE-3 | COM | Black | 18 | | | |
| PE-4 | +5 V | Red | 18 | 150 +30/-10 | AMP 171822-4 or equivalent | AMP 170262-1 or equivalent |
| PF-1 | +5 V | Red | 20 | | | |
| PF-2 | COM | Black | 20 | | | |
| PF-3 | COM | Black | 20 | | | |
| PF-4 | +12 V | Yellow | 20 | 300 +30/-10 | AMP 480424-0 or equivalent | AMP 61314 or equivalent |
| PA-1 | +12 V | Yellow | 18 | | | |
| PA-2 | COM | Black | 18 | | | |
| PA-3 | COM | Black | 18 | | | |
| PA-4 | +5 V | Red | 18 | 150 +30/-10 | AMP 480424-0 or equivalent | AMP 61314 or equivalent |
| PB-1 | +12 V | Yellow | 18 | | | |
| PB-2 | COM | Black | 18 | | | |
| PB-3 | COM | Black | 18 | | | |
| PB-4 | +5 V | Red | 18 | | | |

A.3 24 V_{DC} Power Supply

This is a DC to DC switching mode power supply with a 24 V_{DC} input.

Specifications

Input voltage: +19 ~ +32 V_{DC} (normal operation)

Input current: 16 A max. @ +24 V_{DC} input

Inrush current: 10 A max. @ +24 V_{DC} input

Output load range:

Table A-5: 24 V_{DC} power supply output load range

| Output No. | Output | Min. load | Rated load | Peak load | Voltage accuracy |
|------------|--------|-----------|------------|-----------|-------------------|
| 1 | +5 V | 1.0 A | 25 A | 30 A | 4.90 ~ 5.10 V |
| 2 | +12 V | 0 A | 10 A | 12 A | 11.28 ~ 12.72 V |
| 3 | -12 V | 0 A | 1 A | 2 A | -11.40 ~ -12.60 V |
| 4 | -5 V | 0 A | 1 A | 2 A | -4.75 ~ -5.25 V |

At the factory, the +5 V output was set between 5.00 and 5.10 V, while other outputs were simultaneously set at 60% of their respective rated loads.

The -5 V and -12 V outputs can be used at their respective rated loads. The +5 V output should carry a load of at least 4 A.

Output power:

Total DC continuous power does not exceed 250 W. Each output should be able to operate continuously under its maximum load.

Ripple and noise:

Peak to peak ripple and noise for each output is less than 1% of each output's respective voltage. Measurements were performed with a 15 MHz bandwidth limited oscilloscope, and each output was terminated with a 0.47 μ F capacitor.

Line regulation:

The output line regulation for each output is less than $\pm 1\%$, when measured at each output's respective rated load and under $\pm 10\%$ changing input voltage conditions.

Load regulation:

The values for each of the following output numbers were obtained by changing each output load $\pm 40\%$ from the 60% rated load, whilst simultaneously keeping all other outputs at 60% of their respective rated loads.

Table A-6: 24 V_{DC} power supply load regulation

| Output No. | Load regulation |
|------------|-----------------|
| 1 | $\pm 4\%$ |
| 2 | $\pm 5\%$ |
| 3 | $\pm 3\%$ |
| 4 | $\pm 3\%$ |

Power good signal:

When the power is turned on, the power good signal will activate 100 to 500 ms after all output DC voltages are operating within their respective regulation limits.

Power fail signal:

This will activate at least 0.5 ms before any of the output voltages fall below their respective regulation limits.

General features

Efficiency:

65% typical when measured at nominal input and rated load.

Input protection:

Protection against wrong polarity if the +24 V input voltage is mistakenly reversed.

Output protection:

If for some reason the power supply fails to control itself, the built-in over-voltage protection circuit will shut down the outputs to prevent damage to external circuits. The trip point of the crowbar circuit is approximately 5.7 ~ 7.0 V. The power supply will go into hiccup mode under short circuit or overload conditions, and will recover automatically when such conditions cease to exist.

Environmental specifications

Operating temperature: 0 ~ 45° C

Storage temperature: -40 ~ 75° C

International standards compliance

Safety: UL 1950 D3
CSA 234
TUV EN 60950

APPENDIX **B**

Touchscreen Driver Installation

- Introduction
- Windows 95
- Windows 3.1 and DOS
- Windows NT
- OS/2 (MonitorMouse)

B.1 Introduction

Before you attempt installation of the touchscreen driver, you should carefully read the instructions in the relevant "read me" file stored in the installation CD-ROM. The file path for the instructions in the CD-ROM is:

D:\monmouse\

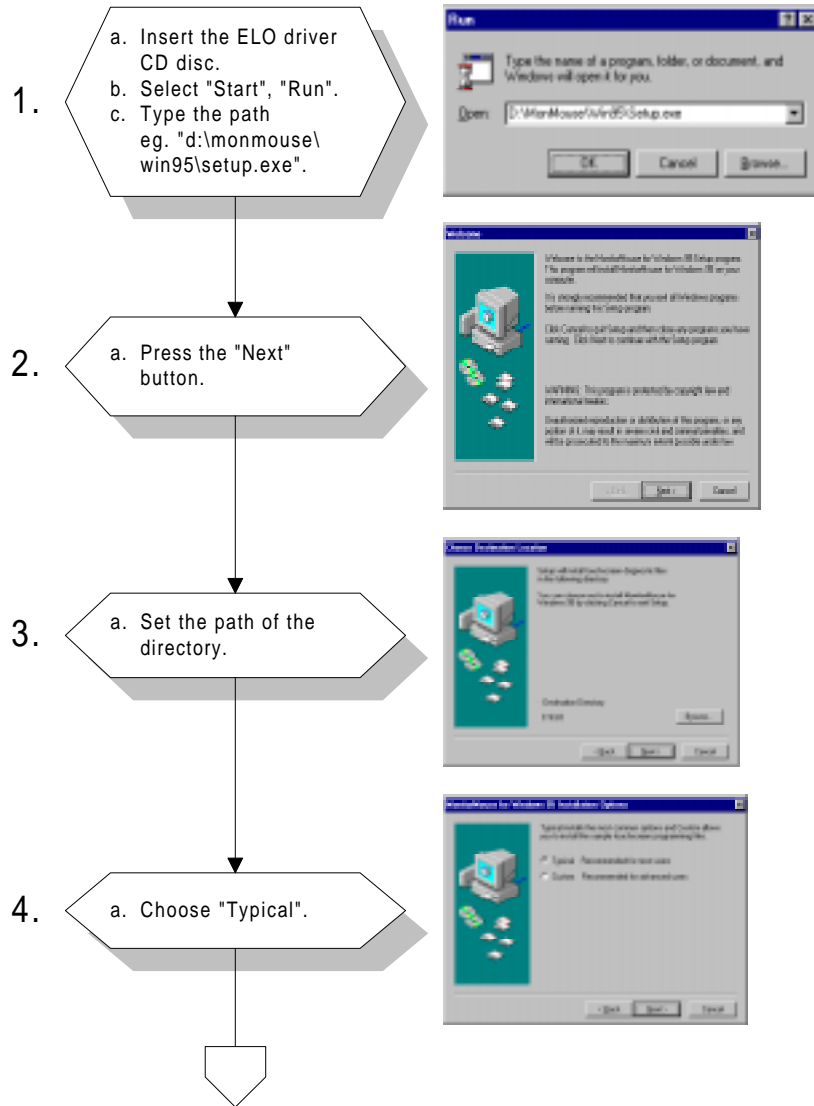
This is where you will find instructions for Win 95, DOS 3.1, Win NT, and OS/2.

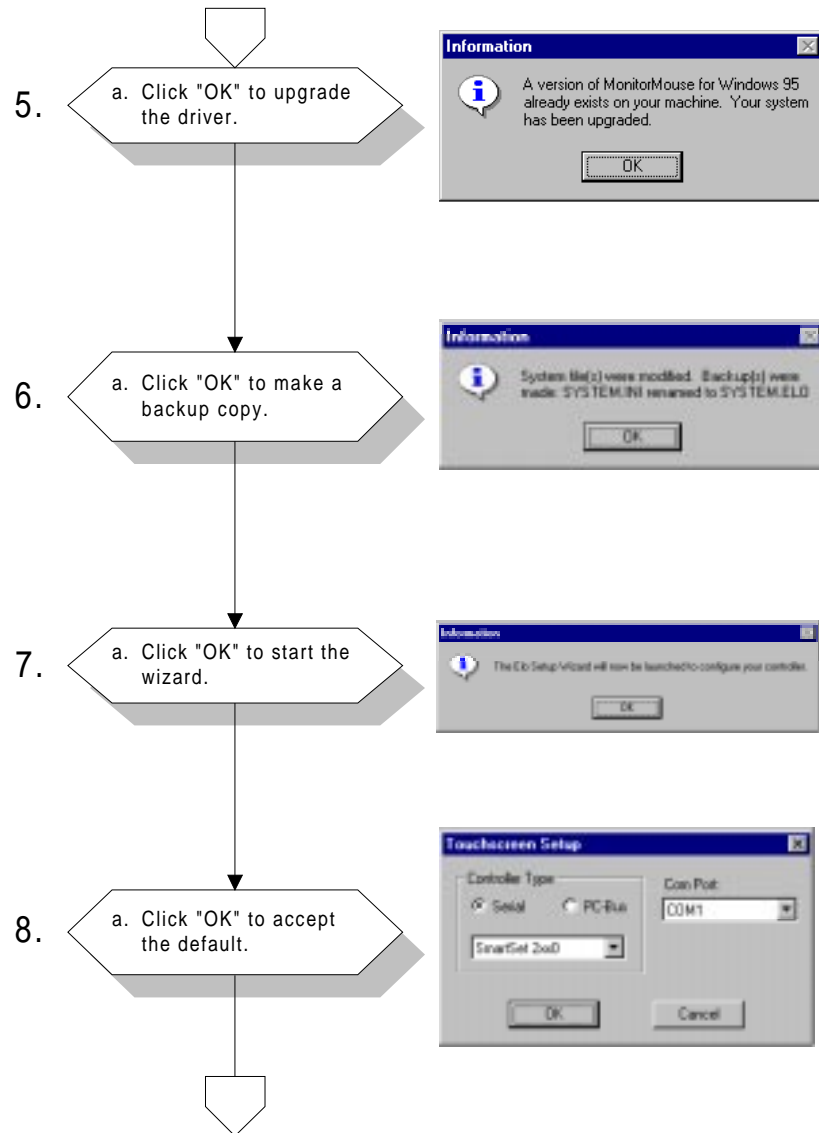
Note 1: The touchscreen driver must be installed from the CD-ROM supplied. The CD-ROM drive is designated as "D" throughout this chapter.

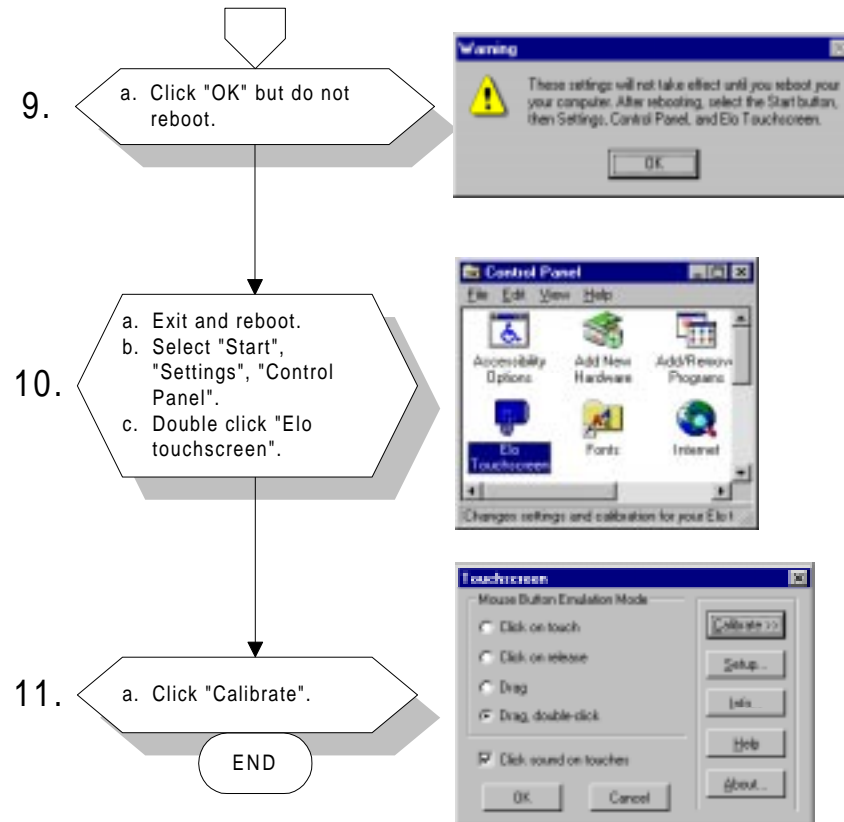
Note 2: The installation instructions assume that the touchscreen is connected to COM1, and that the mouse is connected to and set for COM2. Both of these configurations are factory pre-settings.

Note 3: The following illustrations of windows are examples only. You must follow this manual's flowchart instructions, and pay attention to the instructions which then appear on your screen.

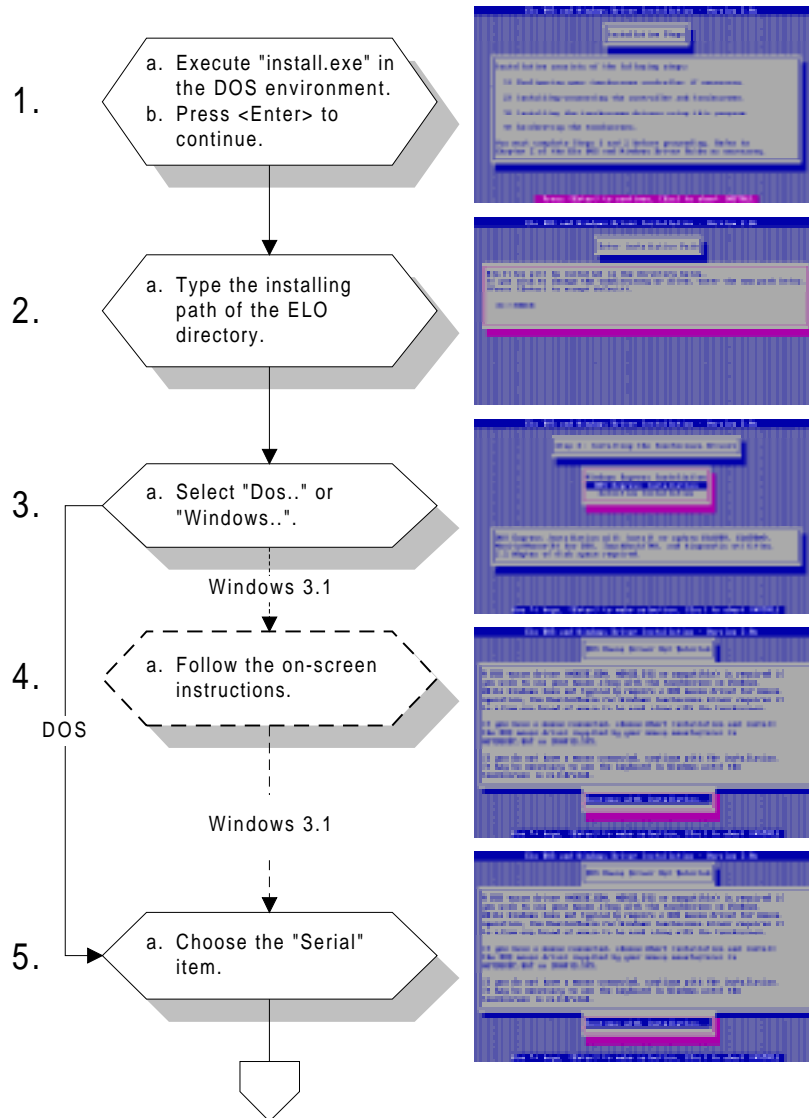
B.2 Windows 95

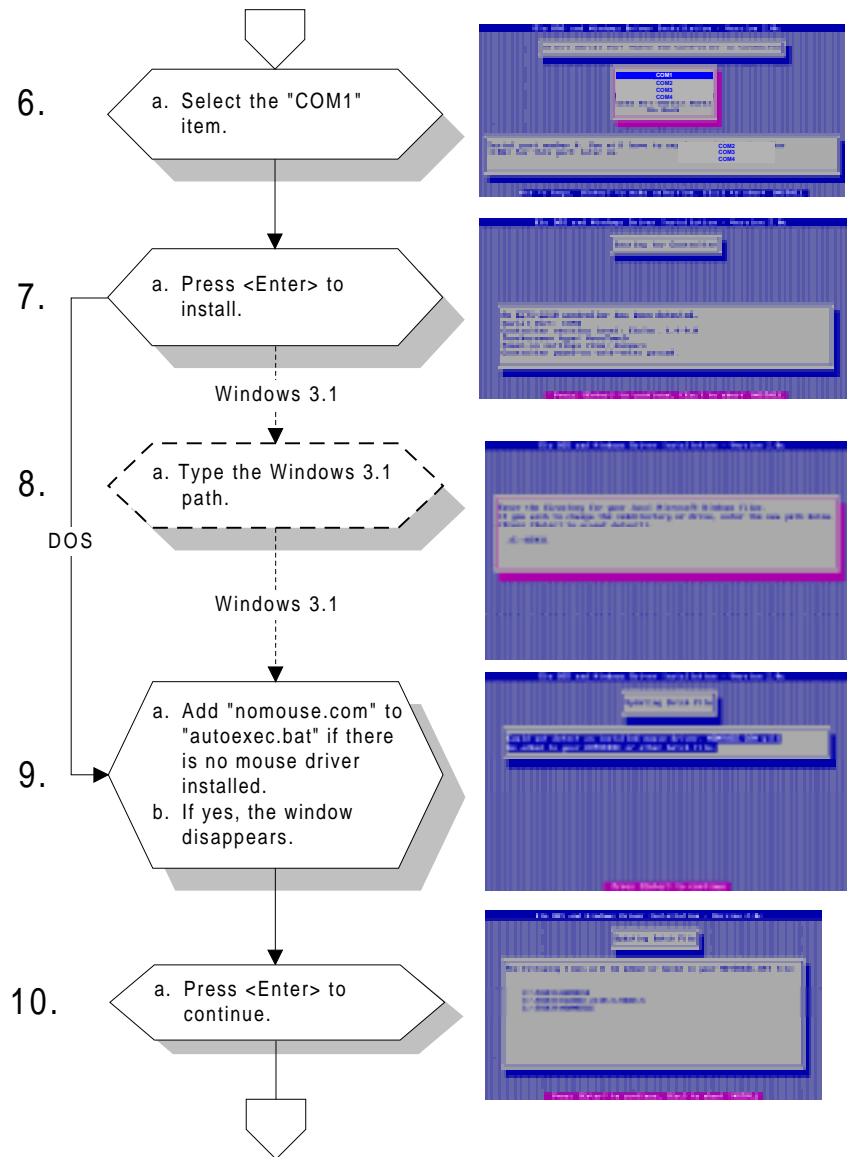


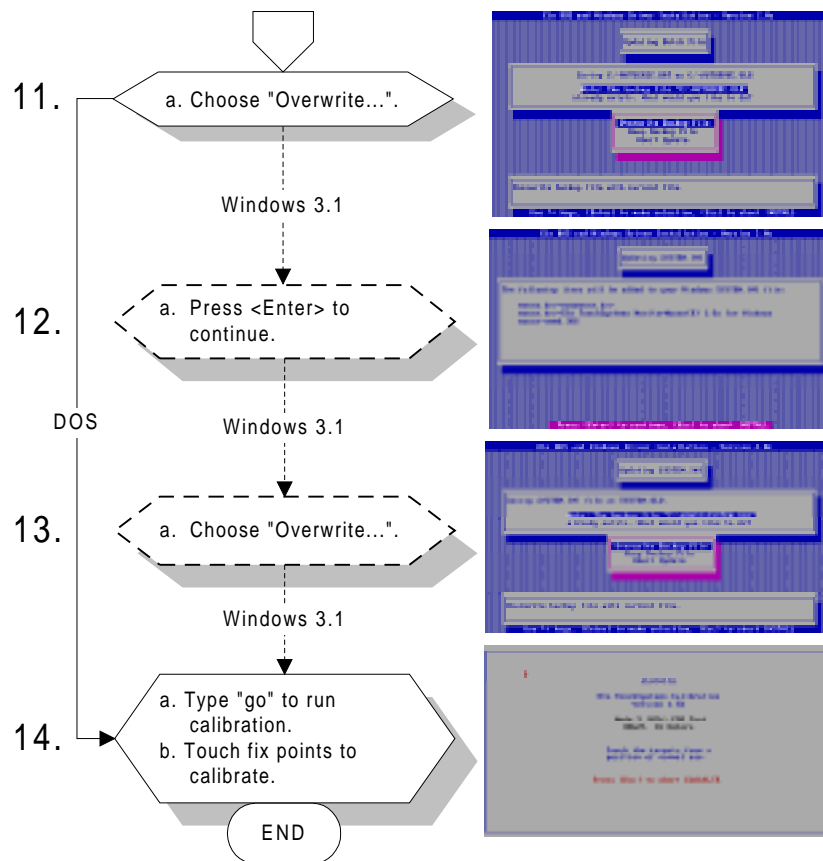




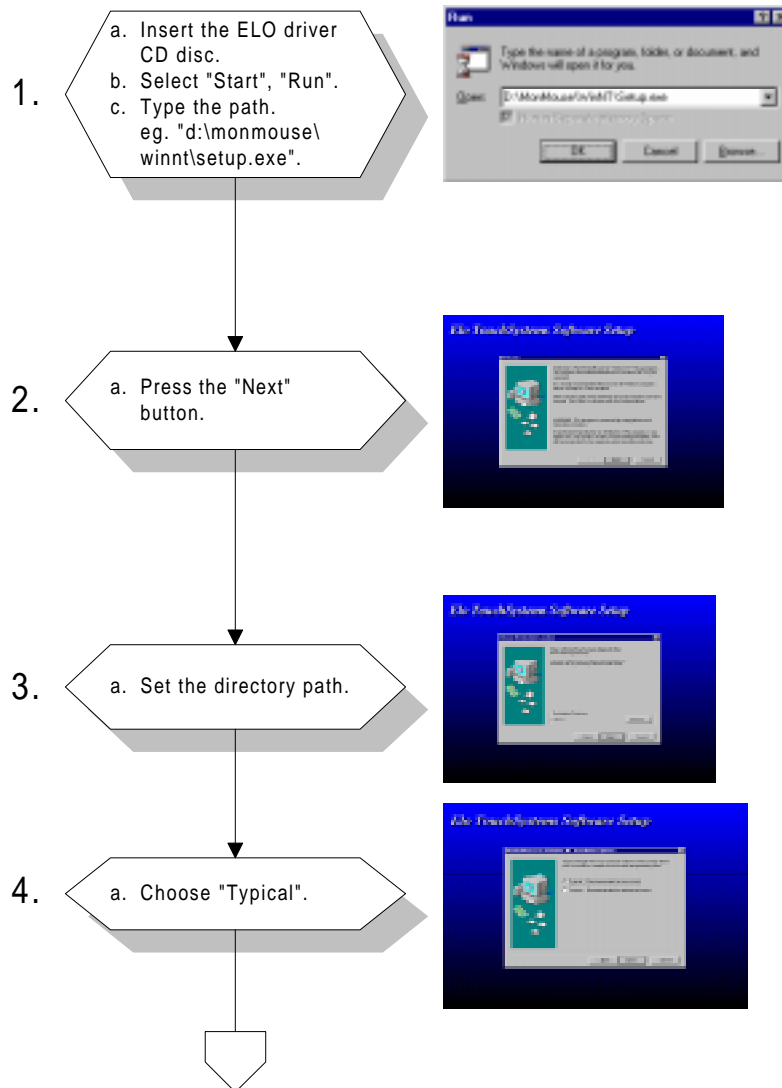
B.3 Windows 3.1 and DOS

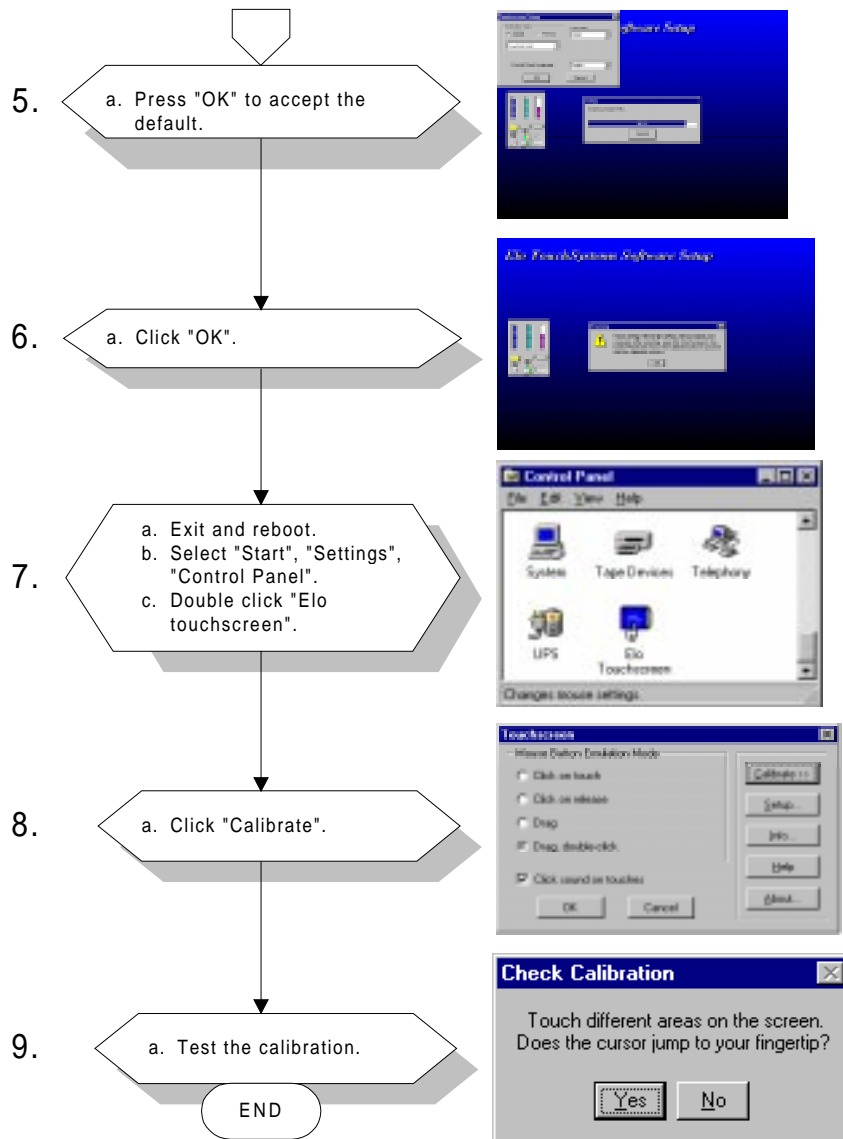






B.4 Windows NT





B.5 OS/2 (MonitorMouse)

First, be sure OS/2 is installed and operating properly with your mouse. We suggest that you prepare OS/2 installation disks or a bootable DOS disk. By doing so, you can easily reboot from such disks should an improper setting in CONFIG.SYS cause the system to not work.

Five steps are required when installing MonitorMouse for OS/2:

Step 1 - Configure your Controller

Step 2 - Copy the Software

Step 3 - Modify CONFIG.SYS

Step 4 - Install the Touchscreen Control Panel

Step 5 - Calibrate the Touchscreen

STEP 1 - CONFIGURE YOUR CONTROLLER

Verify your controller configuration. Elo typically ships touchscreen controllers preconfigured for use with Elo software, including MonitorMouse for OS/2. Configuration requires setting switches and/or installing jumpers that determine controller operating parameters. You will need these parameters when you install the MonitorMouse for OS/2 driver software. For controller installation instructions, refer to the IntelliTouch Product Manual or the AccuTouch Product Manual.

STEP 2 - COPY THE SOFTWARE

The following files are on the MonitorMouse for OS/2 disk:

| | |
|--------------|---|
| !READ.ME! | Text file containing any additions or changes made after this manual was printed. |
| MONMOU01.SYS | Touchscreen driver for serial touchscreen controllers on PC bus systems. |
| MONMOU02.SYS | Touchscreen driver for serial touchscreen controllers on Micro Channel systems. |
| MONMOU03.SYS | Touchscreen driver for PC bus and Micro Channel touchscreen controllers. |
| ELOCAL2.EXE | Touchscreen control panel software program used to calibrate the touchscreen and to select options. |
| ELOCAL2.DLL | Used by ELOCAL2.EXE. |
| ELOCAL2.HLP | Help file for ELOCAL.EXE. |
| ELO.BMP | Elo desktop wallpaper. |
| @6253.ADF | Description file for the E271-2202 Micro Channel touchscreen controller. |
| COMDUMP.EXE | DOS program for testing serial touchscreen controllers. |
| BUSSTAT.EXE | DOS program for testing PC bus touchscreen controllers. |
| SAWDUMP.EXE | DOS program for testing IntelliTouch touchscreen controllers. |

Create a subdirectory on your hard disk and copy the files into it. For example:

```
CD \  
MD ELO  
COPY A:*. * ELO
```

International versions of the touchscreen control panel software program are included in subdirectories on the MonitorMouse for OS/2 disk. Replace ELOCAL2.DLL and ELOCAL2.HLP on your hard disk with the versions from the appropriate subdirectory.

STEP 3 - MODIFY CONFIG.SYS

MonitorMouse for OS/2 is installed by commands in CONFIG.SYS. Use your system editor to make these changes. In general, the changes are as follows:

1. Comment-out the existing DEVICE command(s) for your mouse.
2. Add a DEVICE command for the appropriate MonitorMouse for the OS/2 touchscreen driver immediately after the commented-out DEVICE commands(s).
3. Add a new DEVICE command for MOUSE.SYS.

The order of the DEVICE commands is important. Other changes may be required depending on your hardware configuration and version of OS/2.

Serial Touchscreen Controller on PC Bus System

Change your CONFIG.SYS file as follows:

```
Rem C:/OS2\MOUSE.SYS {Flags}
```

```
Device=c:\elo\monmou01.sys <controller>, <COM  
port>,<baud rate>
```

```
Device=c:\os2\mouse.sys stype=elomou$ {Flags - keep  
same as above}
```

Where:

<controller> is:

2300 for the IntelliTouch E281-2300 serial controller.

4002 for the IntelliTouch E281{A}-4002 serial controller.

2210 for the AccuTouch E271-2210 serial controller.

140 for the AccuTouch E271-140 serial controller.

<COM port> is:

the number of the COM port where the serial output of the touchscreen controller is connected.

<baud rate>

matches the switch or jumper settings on the controller.

Example MonitorMouse for OS/2 DEVICE command:

```
Device=c:\elo\monmou01.sys 2210,1,9600
```

No Mouse

If you do not wish to have a mouse connected, change the “type=elomou\$” flag to “type=elomou\$” on the DEVICE=MOUSE.SYS command.

Disabling the COM Drivers

If your system COM ports are being used by the touchscreen and mouse, REM out the DEVICE=COM.SYS and DEVICE=VCOM.SYS commands (if present) in CONFIG.SYS. This prevents the COM drivers from displaying a message saying the COM port is unavailable.

If only the touchscreen is using a COM port, move the DEVICE=COM.SYS and DEVICE=VCOM.SYS commands before the DEVICE=MONMOU02.SYS command in CONFIG.SYS. Then add the flag (<COM Port>,0,0) to COM.SYS, where <COM Port> is the same as on the DEVICE=MONMOU01.SYS command. For example:

```
Device=c:\os2\com.sys (1,0,0)
```

STEP 4 - INSTALL THE TOUCHSCREEN CONTROL PANEL

The touchscreen control panel software program, ELOCAL2.EXE, is a presentation manager application for calibrating the touchscreen and setting various options.

Add the \ELO\ELOCAL2.EXE program to the System Setup folder and label the icon "Touchscreen". This is accomplished as follows:

1. Open the OS/2 System folder, then System Setup.
2. Open the Templates folder.
3. Drag the Program template with the right mouse button into the System Setup folder. A Settings notebook will be displayed.
4. Enter "C:\ELO\ELOCAL2.EXE" as the path and file name. Enter "C:\ELO" as the working directory.
5. Select the "General" tab. Change the Title to "Touchscreen".
6. Close the notebook.

See your OS/2 documentation for detailed instructions on installing new applications.

STEP 5 - CALIBRATE THE TOUCHSCREEN

Double-click the Touchscreen icon with the mouse (as the touchscreen may not be calibrated yet), or use the keyboard if the mouse is not connected. You may also run ELOCAL2.EXE from an OS/2 Window prompt.

Select "Calibrate" and follow the on-screen instructions. After calibrating, the touchscreen will work like the mouse. The DEVICE=MONMOUxx command in CONFIG.SYS is updated with the new calibration points (-c flag). The calibration points are then set automatically each time the system is started. Recalibration should only be necessary after moving or resizing the video image, or after changing either the touchscreen, controller, or monitor.

Close the touchscreen control panel.

